8/2

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,775	07/19/2001	Susan Schiavi	GZ 2065.23	2672

7590 05/14/2004

Antoinette F. Konski
McCutchen, Doyle, Brown & Enersen, LLP
18th Floor
Three Embarcadero Center
San Francisco, CA 94111

EXAMINER	
GIBBS, TERRA C	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SM.

Office Action Summary	Application No.	Applicant(s)	
	09/909,775	SCHIAVI ET AL.	
	Examiner	Art Unit	
	Terra C. Gibbs	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004 and 01 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1-4,6-14 and 16-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is a response Applicants Amendments filed January 26, 2004 and March 1, 2004.

Claims 1-20 are pending. Claims 1-4, 6-14 and 16-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claims 5 and 15 have been examined on the merits.

Response to Amendment

Applicants Amendment, filed March 1, 2004 to include a complete listing of the claims, as required by 37 CFR 1.121, is acknowledged.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 5 was rejected under 35 U.S.C. 102(b) as being anticipated by Erding et al. [EP 0879,881].

Erding et al. disclose the delivery of a therapeutically effective amount of a human ATG-1639 polypeptide to a subject for the treatment of diseases (see Abstract and pages 11 and 12, for example). Erding et al. disclose the human ATG-1639 polypeptide as SEQ ID NO:2 (see Erding

et al. SEQ ID NO:2). The ATG-639 polypeptide of Erding et al. is 99.5% identical to human frizzled-related protein-4 (SEQ ID NO:2) of the instant invention. Since the ATG-1639 polypeptide of Erding et al. is 99.5% identical to a mammalian frizzled-related protein-4, the delivery of the ATG-1639 polypeptide of Erding et al. in a subject would inherently reduce phosphate re-absorption as claimed in the instant invention.

Claim 5 was rejected under 35 U.S.C. 102(b) as being anticipated by Lark et al. [EP 0877,406].

Lark et al. disclose the delivery of a therapeutically effective amount of a human FRAZZLED polypeptide to a subject for the treatment of diseases (see Abstract and pages 16 and 17, for example). Lark et al. disclose the human FRAZZLED polypeptide as SEQ ID NO:2 (see Lark et al. SEQ ID NO:2). The PRAZZLED polypeptide of Lark et al. is 99.3% identical to human frizzled-related protein-4 (SEQ ID NO:2) of the instant invention. Since the FRAZZLED polypeptide of Lark et al. is 993% identical to a mammalian frizzled-related protein-4, the delivery of the FRAZZLED polypeptide of Lark et al. in a subject would inherently reduce phosphate re-absorption as claimed in the instant invention. **These rejections are maintained** for the reasons of record set forth in the previous Office Action filed September 25, 2003.

Response to Arguments

In response to these rejections, Applicants argue that Erding et al. discloses the administration of a polypeptide for the treatment of "abnormal conditions such as heart disease, hypertension, cardiovascular diseases, kidney diseases, obesity, insulin resistance, diabetes, CNS

diseases, related to both an excess of and insufficient amounts of ATG-1639 polypeptide activity". Applicants argue that Lark et al. discloses the use of a protein for the treatment of a laundry list of diseases from chronic and acute inflammation to restenosis and brain injury. Applicants contend that neither Erding et al. nor Lark et al. make mention of phosphate re-absorption and how to treat diseases related to the dysregulation of phosphate re-absorption.

Applicant's arguments have been considered, but are not found persuasive because the instant specification, at pages 1 and 2, lines 23-26 and 1-3, respectively, teach, "alterations of the phosphate transporting function of *kidney* and subsequent disturbance of serum phosphate concentration often lead to serious biochemical and clinical problems. Some diseases that are known to be associated with abnormal serum phosphate levels include inherent rickets in children, acquired osteomalacia in adults, rhabdomyolysis, cardiomyopathy, tumoral calcinosis, or other *renal failures* and related secondary syndromes." Given this disclosure, it appears that phosphate homeostasis plays a role in both kidney and renal diseases. In light of this, Erding et al. makes mention of phosphate re-absorption and how to treat diseases related to the dysregulation of phosphate re-absorption since Erding et al. discloses the administration of a polypeptide for the treatment of kidney disease, for example. Similarly, Lark et al. makes mention of phosphate re-absorption and how to treat diseases related to the dysregulation of phosphate re-absorption since Lark et al. discloses the use of a protein for the treatment of renal disorders, for example.

Applicants argue that neither Erding et al. nor Lark et al. teach how one can modulate phosphate re-absorption by administering a protein having the same or similar sequence to that identified by Applicants as mammalian frizzled-related protein-4.

This is not found persuasive because as discussed above, the instant specification teaches that phosphate homeostasis plays a role in both kidney and renal diseases. Erding et al. teach the delivery of a therapeutically effective amount of a human ATG-1639 polypeptide to a subject for the treatment of kidney disease (see Abstract and pages 11 and 12, for example). The ATG-639 polypeptide of Erding et al. is 99.5% identical to human frizzled-related protein-4 (SEQ ID NO:2) of the instant invention. Since the ATG-1639 polypeptide of Erding et al. is 99.5% identical to a mammalian frizzled-related protein-4, the delivery of the ATG-1639 polypeptide of Erding et al. in a subject would inherently reduce phosphate re-absorption as claimed in the instant invention. Therefore, Erding et al. teach how one can modulate phosphate re-absorption by administering a protein having the same or similar sequence to that identified by Applicants as mammalian frizzled-related protein-4.

Similarly, Lark et al. teach the delivery of a therapeutically effective amount of a human FRAZZLED polypeptide to a subject for the treatment of renal disease (see Abstract and pages 16 and 17, for example). The FRAZZLED polypeptide of Lark et al. is 99.3% identical to human frizzled-related protein-4 (SEQ ID NO:2) of the instant invention. Since the FRAZZLED polypeptide of Lark et al. is 99.3% identical to a mammalian frizzled-related protein-4, the delivery of the FRAZZLED polypeptide of Lark et al. in a subject would inherently reduce phosphate re-absorption as claimed in the instant invention. Therefore, Lark et al. teach how one can modulate phosphate re-absorption by administering a protein having the same or similar sequence to that identified by Applicants as mammalian frizzled-related protein-4.

Applicants argue that there is no disclosure in the cited references, explicit or inherent, of treating a subject in need of treatment of a disease or condition related to phosphate re-absorption.

Erding et al. discloses the administration of a polypeptide for the treatment of several diseases, including kidney disease. The teachings of Erding et al. anticipate the instant invention because the specification as filed discloses that phosphate homeostasis is involved in kidney disease and renal failure. Given this disclosure, a subject administered human ATG-1639 polypeptide for the treatment kidney disease, as taught by Erding et al., would inherently be treating a subject in need of treatment of a disease or condition related to phosphate re-absorption. Similary, a subject administered human FRAZZLED for the treatment of renal disease as taught by Lark et al. would inherently be treating a subject in need of treatment of a disease or condition related to phosphate re-absorption.

Applicants aruge that the instant specification is enabled to an extent beyond what is shown in Erding et al. and Lark et al. Applicants point the Examiner to pages 44 and 46 of the instant specification where the protein used in the claimed methods is involved in phosphate re-absorption.

This is not found persuasive because as argued above, the teachings of Erding et al. and Lark et al. explicitly and inherently disclose treating a subject in need of treatment of a disease or condition related to phosphate re-absorption. Regardless of whether Erding et al. or Lark et al. appreciated the modulation of phosphate homeostasis, Erding et al. and Lark et al. anticipates the method as instantly claimed.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The scope of the claimed invention encompasses proteins of a broad genus of mammalian frizzled-related protein-4 proteins that are not properly described in the specification as filed. Claim 5 is drawn to a broad genus of mammalian frizzled-related protein-4 proteins, which include proteins from any species, mutated sequences, polymorphic and allelic variants, splice variants, and sequences that have an unspecified degree of identity, and so forth. The specification discloses the human FRP-4 protein represented as SEQ ID NO:2. However, the specification, at page 7, lines 1-3 recites, "the FRP-4 gene refers to all orthologous sequences from divergent species, i.e. homologous sequences encoding polypeptides that have the same activity in different species." The specification as filed, does not provide sufficient written description that would allow one of skill in the art to use human FRP-4 protein represented as SEQ ID NO:2 to predict the structure the broad genus of mammalian frizzled-related protein-4 proteins.

See the January 5, 2001 (Vol. 66, No. 4, pages 1099-1111) Federal Register for the Guidelines for Examination of Patent Applications Under the 35 USC 112 ¶ 1, "Written Description" Requirement. These guidelines state: "[T]o satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Possession may be shown in a variety of ways including description of an actual reduction to practice, or by showing that the invention was "ready for patenting" such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that applicant was in possession of the claimed invention."

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (see page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invention what is claimed." (See Vas-Cath at page 1116).

With the exception of human FRP-4 protein represented as SEQ ID NO:2, the skilled artisan cannot envision the detailed structure of the encompassed mammalian frizzled-related protein-4 proteins. Applicant's specification does not provide a sufficient number of representative species of the genus of mammalian frizzled-related protein-4 proteins, which

would allow one of skill in the art to predict the structure of all members of the claimed genus of proteins. One skilled in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus. Therefore, the specification does not describe the claimed proteins in such full and concise terms so as to indicate that the Applicant had possession of these proteins at the time of filing of this application. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (see page 1115).

Conclusions

Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art of record is that of Erding et al. and Lark et al. which do not teach a method of reducing phosphate re-absorption in a subject in need thereof comprising delivering a mammalian frizzled-related protein-4, wherein the protein is SEQ ID NO:2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terra C. Gibbs whose telephone number is (571) 272-0758. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John L. LeGuyader can be reached on (571) 272-0760. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tcg
May 13, 2004

KAREN A. LACOURCIERE, PH.D
PRIMARY EXAMINER